

AMENDMENTS TO CLAIMS

Please cancel claims 11-14 and amend pending claims 1 and 6 as indicated below. A complete listing of all claims and their status in the application are as follows:

1. (currently amended) A method of manufacturing a semiconductor device on a semiconductor substrate, comprising the steps of:
 - forming a pair of multi-layer structures on an active region on the semiconductor substrate;
 - forming sidewall spacers around the pair of multi-layer structures;
 - forming a dielectric liner layer over the semiconductor substrate, including the pair of multi-layer structures, the sidewall spacers, ~~and~~ the dielectric liner layer in contact with the active region;
 - forming a dielectric layer over the dielectric liner layer;
 - forming a photoresist over the dielectric layer;
 - patterning and developing the photoresist to form a photoresist contact opening therein;
 - forming a first tapered contact opening, using the photoresist contact opening, into the dielectric layer, forming the first tapered contact opening with a bottom opening smaller than the photoresist contact opening;
 - forming a second tapered contact opening, using the first tapered contact opening, into the dielectric liner layer, forming the second tapered contact opening with a bottom opening open to the active region for a smaller region than the active region with which the dielectric liner layer is in contact;
 - removing the photoresist; and
 - forming a conductive material in the first and second tapered contact openings to form a contact in contact with the active region, the dielectric liner layer, and the dielectric layer.
2. (original) The method as claimed in claim 1 including a step of forming a bottom anti-reflecting coating on the dielectric layer before forming the photoresist over the dielectric layer to assist in patterning the photoresist.

3. (original) The method as claimed in claim 1 including forming a bottom anti-reflective coating on the dielectric layer and forming a tapered opening therein which is used in forming the tapered contact opening.

4. (original) The method as claimed in claim 1 wherein forming a tapered contact opening uses an etching process.

5. (original) The method as claimed in claim 1 wherein forming a conductive material includes: depositing the conductive metal over the dielectric layer and in the tapered contact opening; and planarizing the conductive metal flush with the dielectric layer.

6. (currently amended) A method of manufacturing a semiconductor device on a semiconductor substrate, comprising:

forming a pair of multi-layer structures on an active region on the semiconductor substrate;

forming sidewall spacers around the pair of multi-layer structures;

implanting source and drain regions in the active region adjacent the sidewall spacers; depositing a dielectric liner layer of silicon nitride over the semiconductor substrate, in contact with the multi-layer structure, the sidewall spacers, the source region and drain region;

depositing a dielectric layer of silicon oxide on the dielectric liner layer;

depositing a bottom anti-reflective coating over the dielectric layer;

depositing a photoresist over the bottom anti-reflective coating;

photolithographically patterning and developing the photoresist to form a photoresist contact opening therein;

etching an anti-reflective coating tapered opening in the bottom anti-reflective coating using the photoresist contact opening, forming the anti-reflective coating tapered contact opening with a bottom opening smaller than the photoresist contact opening;

etching a first tapered contact opening through the dielectric layer ~~to the source and drain regions~~ using the bottom anti-reflective coating, forming the first tapered contact opening with a bottom opening smaller than the bottom opening of the anti-reflective coating tapered contact opening;

etching a second tapered contact opening through the dielectric liner layer using the dielectric layer, forming the second tapered contact opening with a bottom opening open to the source and drain regions for a smaller region than the source and drain region with which the dielectric liner layer is in contact;

removing the photoresist;

removing the bottom anti-reflective coating; and

depositing a conductive material in the first and second tapered contact openings to form a contact.

7. (original) The method as claimed in claim 6 including a step of depositing a bottom anti-reflecting coating of silicon oxy-nitride on the dielectric layer before forming the photoresist over the dielectric layer for assisting in the patterning of the photoresist.

8. (original) The method as claimed in claim 6 including depositing a bottom anti-reflective coating of silicon oxy-nitride on the dielectric layer.

9. (original) The method as claimed in claim 6 wherein etching a tapered contact opening uses a semi-isotropic etching process.

10. (original) The method as claimed in claim 6 wherein depositing a conductive material includes: depositing the conductive metal over the dielectric layer and in the tapered contact opening, the conductive metal selected from a group consisting of tungsten, tantalum, titanium, copper, aluminum, gold, silver, alloys thereof, and compounds thereof; and planarizing the conductive metal flush with the dielectric layer.

11 – 14 (cancelled)